

BOGACHEV, M.I.

Studying skin temperature in various combinations of cooling and muscular activity. Opyt izuch.reg.fiziol.funk. no.3:219-230 '54.

(MIRA 8:12)

1. Laboratoriya ekologicheskoy fiziologii Instituta fiziologii imeni I.P.Pavlova Akademii nauk SSSR.

(BODY TEMPERATURE) (EXERCISE) (COLD--PHYSIOLOGICAL EFFECT)

BOGACHEV, M.I.

Physiological study of hardening the human body in the physical  
training system. Vest.Len.un.9 no.1:73-89 Ja '54. (MLRA 9:7)  
(Physical fitness)

BOGACHEV, M.I.

BOGACHEV, M.I.

Variations in thermoregulation at rest and in athletic training  
under solar radiation of varying intensity. Test (en. un.)  
no. 4129-122 en '54. (U.S.A. 8:6)

(Body temperature)

BOGACHEV, M.N.

Osnovy modifitsirovaniya chuguna [The Principles of Cast-Iron Inoculation]  
Mashgiz, 1948.

BOGACHEV, M. N.

YEROKHIN. A.A.; PETREV, A.V.; BOGACHEV, M.N.

Examining rapid phenomena in the welding arc by taking motion  
pictures. Avtom. svar. 7 no.1:59-63 Ja-F '54. (MIRA 7:7)  
(Electric welding) (Moving-pictures in industry)

POROKHOV, V.S.; BOGACHEV, M.N.

Surface hardening of parts by shot peening. Mashinostroitel' no.10:  
21 0 '65. (MIRA 18:10)

BOGACHEV, M. N., (Cand. Tech. Sci.)

"The Transfer of Heat-treatment Furnaces to Gaseous Fuel"

(Theory and Practice of Gas Combustion; Transactions of a Scientific and Technical Meeting) Leningrad, Gostoptekhnizdat, 1958. 343 p.

L 04200-67 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD  
 ACC NR: AP6028592 SOURCE CODE: UR/0129/66/000/008/0068/0069

AUTHOR: Porokhov, V. S.; Bogachev, M. N. 43  
 B

ORG: none

TITLE: The effect of residual stresses on the fatigue strength of 30KhGSA steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8, 1966, 68-69

TOPIC TAGS: stainless steel, fatigue strength, residual stress, shot blasting, hydraulic fluid / 30KhGSA steel

ABSTRACT: Changes in fatigue strength were determined as a function of residual stress in 30KhGSA steel heat treated to a  $R_c$  hardness of 36-38. Variations in surface residual stress were introduced by different strengthening methods: 1) knurl rolling, 2) centrifugal ball method, 3) dry shot blasting, and 4) shot blasting in a stream of vapor. Residual stress is given as a function of distance from the surface for each method. For each method of residual stress application, fatigue curves were obtained under identical conditions. Fatigue testing was done with a symmetrical loading cycle at a frequency of 1450 cycles/min. The fatigue strength of the steel increased with rise in the value of compressive residual stress in the surface layer. The largest increase occurred in samples which were strengthened by shot blasting in a stream of

UDC: 539.373:620.178.311.2

Card 1/2



L 04200-67

ACC NR: AP6028592

water; this method produced the largest amount of compressive residual stress on the surface of the samples. Orig. art. has: 3 figures.

SUB CODE: 11,13,2C / SUBM DATE: none/ ORIG REF: 002

Card 2/2 LC



KOBYSHEV, F.K.; BOGACHEV, N.I.; POPOV, A.V.

New work organization. Neft. khoz. 40 no.8:28-30 Ag '62.  
(MIRA 17:2)

BOGACHEV, N.P., veterinarnyy vrach; LOGISHINETS, N.G., veterinarnyy vrach;  
SERDYUKOV, V.P.

Control of foot-and-mouth disease. Veterinariia 37 no.3:20-21  
Mr '60. (MIRA 16:6)

1. Zaveduyushchiy Staro-Kriushanskim veterinarnym uchastkom  
Voronezhskoy oblasti.

(Foot-and-mouth disease)

**BOGACHEV, N. P.**

**USSR/Physics - Nuclear physics**

**Card 1/1**    **Pub. 22 - 13/63**

**Authors**        : Bogachev, N.P., and Vzorov, I.K.

**Title**           : Elastic dispersion of protons by protons with energies of 660 mev.

**Periodical**    : Dok. AN SSSR 99/6, 931-934, Dec 21, 1954

**Abstract**       : Results of experiments with the dispersion of protons by protons of 660 mev of energy are described. The experimental set-up of the equipment and the methods which were used are described in detail. It is indicated that the differential cross-section of 660 mev proton dispersion, is about  $(2.1 \pm 0.2) \cdot 10^{-27} \text{ cm}^2/\text{spheradian}$ , whereas for protons of 150-450 mev it is  $(3.4-5) \cdot 10^{-27} \text{ cm}^2/\text{spheradian}$ . Eleven references; 3-USSR (1951-1954). Graphs.

**Institution:**    The Institute of Nuclear Problems of the Acad. of Scs. of the USSR

**Presented by:**   Academician L.A. Artsimovich, November 4, 1954

*Bogachev, N.P.*  
USSR/ Physics - Nuclear physics

Card 1/1 Pub. 22 - 19/63

Authors : Meshcheryakov, M.G., member correspondent of the Acad. of Scs. of the USSR; Bogachev, N.P.; Neganov, E.S.; and Piskarev, E.V.  
Title : Elastic dispersion of protons by protons of 460 mev energy

Periodical : Dok. AN SSSR 99/6, 955-958, Dec 21, 1954

Abstract : Experiments, intended to throw light on the nature of the dispersion of protons by protons of high energies, are described. The experiments were conducted with beams of protons of  $10^6$  protons per  $\text{cm}^2$  intensity obtained from the synchrocyclotron at the Institute of Nuclear Problems of the Acad. of Scs. of the USSR. The cross section of the proton dispersion was determined by means of deflected and recoiled protons of the elastic dispersion observed through two "conjugated" counters (telescopes). Diagrams show the results of experiments. Twelve references; 3-USSR (1950-1954). Graphs; diagrams.

Institution: The Institute of Nuclear Physics of the Acad. of Scs. of the USSR

Submitted: .....

BOGACHEV, N. P.

SCIENCE

PERIODICALS: ~~ACTA BIOLOGICA. Vol. 3, No. 4, 1955~~

MAGYAR FIZIKAI FOLYOIRAT. Vol. 3, no. 4, 1955.

Bogachev, N. Elastic scattering of protons on 660-Mev energy protons. Tr. from the Russian. p. 423.

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 2,  
February 1959, Unclass.

"APPROVED FOR RELEASE: 06/09/2000

CIA-RDP86-00513R000205810003-2

Director of the National Security Administration  
Mr. J. Edgar Hoover

APPROVED FOR RELEASE: 06/09/2000

CIA-RDP86-00513R000205810003-2"



691. THE REACTION  $p + p \rightarrow d + \pi^+$  AT 450 MeV.  
M.G. Meshcheryakov, B.B. Nazarov, N.P. Bogachenko and  
B.B. Nazarov

Dokl. Akad. Nauk SSSR, Vol. 100, No. 4, 673-6 (1955). In Russian

This reaction, which was investigated in a synchrocyclotron, was identified by means of two conjugated telescopes tuned for coincidences between  $\pi^+$  mesons and deuterons. It was found that the efficiency of recording this reaction was  $0.73 \pm 0.04$ . The complete cross-section of this reaction as integrated from the regular distribution of the mesons was  $(1.5 \pm 0.1) \times 10^{-22}$  cm. The experimental values obtained in this paper and in other papers [Abe 1952, 1951, 621, 558, 1952 and 1950 (1953)] show that the cross-section of the reaction varies as  $T^n$ , where  $T$  is the meson energy in the mass-center system, and  $n$  is between 3/2 and 2. The angular distribution obtained in this research points to the generation of the mesons predominantly, if not exclusively, in the  $p$  state. P. Lachman

DOGACH EV, IV. I.

Y 6913

INVESTIGATION OF THE PROTON-PROTON INTERAC-  
TION AT HIGH ENERGIES. M. G. Mescerjakov, N. P.

Bogachev, and B. S. Neganov (Institute of Nuclear Problems,

Academy of Sciences of the U.S.S.R., Moscow). Nuovo

cimento (10) 3, Suppl. No. 1, 119-32 (1966). (In English)

Results of the investigation of (p,p) collisions in the  
energy region from 460 to 666 Mev were reported. In the  
region the (p,p) interaction includes elastic scattering and  
meson production. (F.S.)

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BOGACHEV, N.P.

SUBJECT USSR / PHYSICS  
 AUTHOR BOGACHEV, N.P.  
 TITLE The Elastic Scattering of Protons by Protons at Energies of  
 460, 560 and 660 MeV within the Range of Small Angles.  
 PERIODICAL Dokl. Akad. Nauk, 108, 806-808 (1956)  
 Publ. 6 / 1956 reviewed 8 / 1956

CARD 1 / 2

PA - 1219

The proton bundle emerging from the synchrocyclotron of the Institute for Nuclear Problems of the Academy of Science in the USSR passed through a system of collimators and impinged upon a target of liquid hydrogen. The scattered protons were registered by means of a telescope consisting of scintillation counters. The charged products of the nonelastic (p-p) collisions (positive pions, protons, and deuteron) were separated from the elastically scattered protons by means of filters. The energy of the protons in the bundle amounted to  $657 \pm 2$  MeV and the 460- and 560- MeV protons were conserved by slowing down with polyethylene absorbers. Measurements extended up to an angle of  $5^\circ$  in the center of mass system ( $\sim 2,2^\circ$  in the laboratory system. The differential cross sections of the (p-p) scattering found here are shown in a table and agree fairly well with the results obtained at BIRMINGHAM (L.RIDDIFORD, Proc.Roy.Soc., in print). The present results make it possible, within the energy range investigated, to obtain precise data concerning older results obtained for the ratio of the total cross sections of elastic and nonelastic processes on the occasion of (p-p) interaction, and also concerning the data on the total cross section of the re-

Dokl. Akad. Nauk, 108, 806-808 (1956)

CARD 2 / 2

PA - 1219

action  $p + p \rightarrow n + p + \pi^+$ . The total cross sections of the various processes occurring on the occasion of (p-p) interaction are shown in a table. According to the total number of data at present known concerning the scattering of energy-rich protons by protons, the total cross section of elastic (p-p) scattering within the energy range of from 800 to 660 MeV is constant within the limits of measuring errors, and it decreases somewhat if energy rises to from 800 to 1000 MeV. Therefore the increase of the total cross section of (p-p) interaction within the range of from 460 to 660 MeV is due only to meson-producing processes. The contribution made by nonelastic processes towards the total cross section amounts to 13% at 460 MeV, 26% at 560 MeV, and 40% at 660 MeV. From these data and from the total cross sections of the reactions  $p + p \rightarrow d + \pi^+$  and  $p + p \rightarrow p + p + \pi^0$  the total cross section of the reaction  $p + p \rightarrow n + p + \pi^+$  may be estimated; the corresponding values are shown in a table. The total cross section of  $p + p \rightarrow n + p + \pi^+$  increases with a rise of energy from 460 to 660 MeV by about six times its amount. The value of this cross section agrees well at 660 MeV with the direct measuring results obtained by V.M.SIDOROV, Zurn. eksp. i teor. fis, 31, 8 (2) (1956).

INSTITUTION: Institute for Nuclear Problems of the Academy of Science in the USSR.

BOGACHEV, N.P., MESHCHERYAKOV, M.G., LEKSIN, G.A., NEGANOV, B.S., PISKAREV, E.V.

*Attended both 1st and 2nd Week Sessions. (SO: CH, CC-E-5071 #31266) Incl.*

"Scattering of Protons with Energies of 460 and 660 MeV by Protons and Deuterons," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No 1, pp. 21-30, 1957

*CERN-Symposium on High Energy Accelerators and Pion Physics.*

BOGACHEV, N.P.

89-3-7/30

AUTHORS:

Bogachev, N. P. , Van Shu-Fen<sup>1</sup>, Gramenitskiy, I. M. ,  
Kirillova, L. F. , Lebedev, R. M. , Lyubimov, V. B. ,  
Markov, P. K. , Merkov, Yu. P. , Podgoretskiy, M. I. ,  
Sidorov, V. M. , Tolstov, K. D. , Shafranov, M. G.

TITLE:

The Interaction of 9 Bev Protons With Nuclei in Photo-Emulsion  
(Vzaimodeystviye protonov s energiyey 9 Bev s yadrami foto-  
emul'sii)

PERIODICAL:

Atomnaya Energiya, 1958, Vol. 4, Nr 3, pp. 281 - 284 (USSR)

ABSTRACT:

The photoemulsion HMKΦM-P with a layer of about 450 μ was irradiated with protons within and out of the vacuum chamber of the 9 Bev synchrophasotron. The mean range of 9 Bev protons for an interaction is  $34,7 \pm 1,5$  cm. (The scattering for angles below  $5^\circ$  was not taken into account). 258 cases of a nuclear interaction were observed. The mean number of fast particles  $n_g$  generated in a process of interaction amounts to  $3,4 \pm 0,1$ . The angular distribution of these particles shows a clearly preferred forward motion. The mean number of black and grey traces  $N_n$  - the recoil nuclei

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89-3-7/30

The Interaction of 9 Bev Protons With Nuclei in Photo-Emulsion

not being considered - is  $8,3 \pm 0,5$ .

From 249 found stars 18 can be considered to constitute an interaction of the initial protons with "free" or "quasi-free" protons.

13 stars can be considered to represent an interaction between protons and "quasifree" neutrons. All of them have an odd number of traces, and in the point of formation of the star  $\beta$ -traces can be observed. The mean number of fast particles in these 13 star traces is  $3,1 \pm 0,3$ . There are 5 figures, 1 table, and 7 references, 1 of which is Slavic.

SUBMITTED: December 16, 1957

AVAILABLE: Library of Congress

1. Photoemulsions-Proton irradiation
2. Vacuum chambers-Applications
3. Particles-Distribution

Card 2/2

BOGACHEV, N. P.

56-2-48/51

AUTHORS: Bogachev, N. P. , Mikhul, A. K. , Petrashku, M. G. ,  
Sidorov, V. M.

TITLE: On the Angular Distribution of the Positive Myons Generated  
by a  $(\pi-\mu)$ -Decay (Ob uglovom raspredelenii  $\mu^+$ -mezonov ot  
 $(\pi-\mu)$ -raspada)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1956,  
Vol. 34, Nr 2, pp. 531 - 532 (USSR)

ABSTRACT: First the authors mention several earlier works dealing with  
the same subject. The present work gives the results of the  
examination of 10.000  $(\pi-\mu)$ -decay processes of positive  
myons which came to a standstill in an HMKM emulsion of  
the P type. The emulsions were irradiated in a positive  
beam of the synchrocyclotron of the Laboratory for Nuclear  
Problems (Laboratoriya yadernykh problem) and during their  
exposure they were encased within a steel screen which pro-  
tected them against the action of the exterior magnetic field.  
The  $(\pi-\mu)$ -decay processes were observed by means of an exa-  
mination with the MBM-3 microscope with about 100-fold en-

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56-2-48/51

On the Angular Distribution of the Positive Myons Generated by a  $(\pi-\mu)$ -Decay

largement. The angular distribution resulting immediately on inspection is shown in a diagram. The asymmetry coefficient of this angular distribution is  $b = -0,048 \pm 0,020$ . Then the authors shortly report on the estimate of systematical errors. The probability of the observation of a  $(\pi-\mu)$ -decay process decreases within the range of small values of the angle  $\theta^*$  between the final direction of the positive pion and the initial direction of the positive myon. The distribution determined by direct observation was corrected taking into account the registration probability and the experimentally determined distribution of the angles between the initial direction and the final direction of the positive pions. The corrected distribution of positive myons through the projections of the angles is shown in a diagram. The coefficient of asymmetry of this angular distribution is  $b = +0,009 \pm 0,018$ . Therefore the angular distribution of that part of positive myons which are generated by the  $\pi-\mu$ -decay of the positive pions which had come to a standstill is isotropic. The cause for the asymmetry observed in some works can at least partly be connected with a systematical error investigated in this work. There are 2 figures,

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56-2-48/51  
On the Angular Distribution of the Positive Myons Generated by a ( $\pi$ - $\mu$ )-Decay

and 5 references, none of which is Slavic.

ASSOCIATION: United Institute for Nuclear Research  
(Ob'yedinenyy institut yadernykh issledovaniy)

SUBMITTED: December 4, 1957

AVAILABLE: Library of Congress

1. Myons-Scattering
2. Synchrocyclatron-Applications
3. Emulsion irradiation-Processes

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SOV/20-121-4-12/54

21(7)  
 AUTHORS: ~~Bogachay, N. P.~~, Bunyatov, S. A., Merekov, Yu. P., Sidorov, V. M.

TITLE: The Interaction of Protons With an Energy of 9 BeV With Free and Bound Nucleons in a Photoemulsion (Vzaimodeystviye protonov s energiyey 9 BeV so svobodnymi i svyazannymi nuklonami v fotoemul'sii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 121, Nr 4, pp 617-620 (USSR)

ABSTRACT: An emulsion chamber with 100 layers of the type NIKFI-R...<sup>2</sup> (with a thickness of  $\sim 450 \mu$  and with an area of  $10.10 \text{ cm}^2$ ) was irradiated by 9 BeV protons of a synchrophasotron. The emulsion layers were investigated along the tracks of the primary protons. On a length of 485 m 1308 interactions of protons with nuclei were found. The processes of scattering into an angle of less than  $5^\circ$  are not included in this number. 178 of these 1308 interactions are interactions of protons with nucleons in the photoemulsion. The authors found 115 cases which are similar to (p - p)-interactions and 63 cases similar to (p - n)-interactions. The cross section of the

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SOV/20-121-4-12/54

The Interaction of Protons With an Energy of 9 BeV With Free and Bound Nucleons in a Photoemulsion

inelastic (p - p)-interaction at 9 BeV amounts to 30 millibarn. Within the interval 1 - 9 BeV, the cross section of the inelastic (p - p)-interaction is practically constant, and apparently it is constant also in the region of higher energies. 11 of the 115 (p - p)-interactions are due to the elastic (p - p)-scattering on hydrogen in the emulsion. The differential cross sections of the elastic (p - p)-scattering cannot be estimated because the experimental data are insufficient. The total cross section of the elastic (p - p)-scattering at 9 BeV (with respect to the necessary corrections and of the background due to the quasielastic (p - p)-scattering ( $\sim 10\%$ )) amounts to

$\sigma_{pp}^{\text{elastic}} = (10 \pm 4)$  millibarn. This total cross section is constant (within the limits of experimental errors) in the interval 6 - 9 BeV. An estimation of the total cross section of the (p - p)-interaction at an energy of 9 BeV (the sum of the elastic and of the inelastic cross sections) gives the value  $\sim 40$  millibarn. A diagram gives the angular distributions

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The Interaction of Protons With an Energy of 9 BeV With Free and Bound  
Nucleons in a Photoemulsion

of the charged particles due to the (p - p)- and (p - n)-interactions are equal within the limits of experimental errors. Also the angular distributions of the fast charged particles due to the (p - p)- and (p - n)-interactions have the same values. The average free path for the nuclear interaction of the fast secondary particles due to the (p - p)-interactions and (p - n)-interactions is equal to  $(34 \pm 6)$  cm and  $(28 \pm 7)$  cm, respectively. These values are not different from the free paths for the interaction of protons and pions with energies of 1 - 6 BeV and they also agree with the results obtained by other authors. According to the results of this paper the average free length of path for the interaction of 9 BeV protons with the nuclei of a photoemulsion amounts to  $(37.1 \pm 1.0)$  cm. In a following paper, the above-given results will be compared with the results of the calculations according to the statistical theory of the multiple production of particles. The authors thank Professor V. I. Veksler for his interest in this paper and also Professor V. P. Dzhelepov and R. M. Ryndin for the discussion of the results. There

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SOV/20-121-4-12/54

The Interaction of Protons With an Energy of 9 BeV With Free and Bound Nucleons in a Photoemulsion

are 1 figure, 1 table, and 20 references, 9 of which are Soviet.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research)

PRESENTED: June 5, 1958, by L. A. Artsimovich, Academician

SUBMITTED: June 3, 1958

Card 4/4

21(8)

SOV/20-128-3-16/58

AUTHORS: Batusov, Yu. A., Bogachev, N. P., Sidorov, V. M.,  
Chulli, I.

TITLE: Formation of Mesons by  $\pi^+$ -Mesons With 280 Mev Energy on Nuclei  
in a Photoemulsion

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 491-494  
(USSR)

ABSTRACT: When a positive pion collides with a nucleon in a compound nucleus, two charged mesons may be formed by the following reactions:  $\pi^+ + p \rightarrow \pi^+ + \pi^+ + n$  (I),  $\pi^+ + n \rightarrow \pi^+ + \pi^- + p$  (II). The authors investigated reactions (I) and (II) on the interaction of fast positive pions with nuclei in the photoemulsion. An emulsion chamber composed of ten layers of the emulsion NIKFI of the kind R (thickness 400  $\mu$ , diameter 80 mm) was irradiated in a beam of positive pions with 307 Mev energy in the synchrocyclotron of the Laboratoriya yadernykh problem (Laboratory for Nuclear Problems) of the Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Considering the slowing-down of mesons in the emulsion, the results of measurement were referred to an energy of (290 $\pm$ 20)Mev

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SOV/20-128-3-16/58

Formation of Mesons by  $\pi^+$ -Mesons With 280 Mev Energy on Nuclei in a Photo-emulsion

of primary mesons. 13 (+ 4 probable) cases with two secondary mesons were recorded in 300 stars which had been found in the emulsion layers. In about 40% of the cases recorded only the track of a secondary particle could be found. When positive 280-Mev pions collide with nuclei of the photoemulsion, these pions in the nucleus are absorbed as often as negative pions. Disintegrations totalled 92 with slowed-down negative pions, and 106 with positive ones. Further investigation disclosed that 39 of these 198 disintegrations contained two secondary charged mesons. A diagram illustrates the energy distribution of mesons for the cases in which two secondary mesons were emitted. 7 of 112 investigated mesons possessed an energy of more than 60 Mev. The spectrum attained its maximum within the range 30-40 Mev. The major part of secondary mesons have an energy of less than 60 Mev, and the mean energy of the latter amounts to 30 Mev. The second diagram shows the spectrum of stopped negative pions. It resembles that mentioned above, yet it is distinctly shifted toward lower energies. The mean energy of negative pions amounts to 16 Mev.

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SOV/20-128-3-16/58

Formation of Mesons by  $\pi^+$ -Mesons With 280 Mev Energy on Nuclei in a Photo-emulsion

The difference in the mean energies of positive and negative pions ( $\sim 14$  Mev) is due to the effect of the Coulomb field of the nucleus. The angular distribution of pions within the center-of-mass system is not isotropic, and attains a wide maximum at angles of  $\sim 180^\circ$ . A table shows the angular distribution of mesons for cases with two mesons. A distinct correlation in the direction of emission of the two secondary mesons is noticed here. The cross sections of meson formation during the collision of positive pions with nuclei in the photoemulsion were determined by comparing the number of formation processes with the number of stars produced by mesons within the same emulsion volume. The median range of positive pions for star formation in the emulsion amounts to  $(32.4 \pm 2.3)$  cm. The cross sections of the formation of charged mesons in the processes  $\pi^- + \text{nucleus} \rightarrow \pi^-$  and  $\pi^+ + \text{nucleus} \rightarrow \pi^+$  are of the same order of magnitude. In most cases, the resultant mesons are absorbed in the same nucleus. For the reactions  $\pi^+ + n \rightarrow \pi^+ + \pi^- + p$  and  $\pi^- + p \rightarrow \pi^- + \pi^+ + n$ , the cross sections  $(0.3 \pm 0.2)$  and

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SOV/20-128-3-16/58

Formation of Mesons by  $\pi^+$ -Mesons With 280 Mev Energy on Nuclei in a Photo-emulsion

0.1 mb were obtained. The authors thank Professor V. P. Dzhelepov for his interest in this investigation. There are 4 figures, 2 tables, and 10 references, 6 of which are Soviet.

PRESENTED: May 27, 1959, by L. A. Artsimovich, Academician

SUBMITTED: May 11, 1959

Card 4/4

BOGACHEV, N. P., Cand Phys-Math Sci (diss) -- "The elastic dispersion of protons on protons with energies of 460 and 660 Mev". Dubna, 1960. 11 pp (Joint Inst of Nuclear Investigations, Laboratory of Nuclear Problems), 160 copies (KL, No 15, 1960, 131)

*BOGACHEV, N. P.*

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B006/B011

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AUTHORS: Bogachev, N. P., Bunyatov, S. A., Vishki, T., Merekov, Yu. P.,  
Sidorov, V. M., Yarba, V. A.

TITLE: Production of Charged  $\pi$ -Mesons<sup>17</sup> in the Interaction of 9-Bev  
Protons With Photoemulsion Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 38, No. 2, pp 432-440

TEXT: The authors investigated the energy spectrum and the angular distribution of pions arising in the interaction of 9-Bev protons with photoemulsion nuclei. An emulsion chamber with 100 layers of the type НИКФИ-Р (NIKFI-R) (thickness: 450 $\mu$ , area: 10:10 cm<sup>2</sup>) was exposed to the inner proton beam of the proton synchrotron of the Laboratoriya vysokikh energiy OIYaI (High-energy Laboratory of the OIYaI). Such events were selected for analysis, in which 3 or more fast particles occurred. This selection permitted the separation of events in which several pions were produced. Among the 204 tracks selected for the analysis there were 78 with momenta

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Production of Charged  $\pi$ -Mesons in the  
Interaction of 9-Bev Protons With Photo-  
emulsion Nuclei

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B006/B011

$p\beta \leq 650$  Mev/c and 126 with  $p\beta > 650$  Mev/c; ionization was determined by a method described in Ref. 12. Fig. 1 shows ionization as a function of  $p\beta$ . A table supplies data concerning the K-mesons produced in proton - nucleus collisions. The energy distribution is discussed next. Fig. 2 shows the empirical energy spectrum of particles with  $p\beta \leq 650$  Mev/c (which corresponds to a pion energy of 540 Mev), and the curve calculated theoretically according to data from Ref. 13 for the spectrum of pions originating from NN-collisions. Fig. 3 shows the angular distribution of fast pions (ionization  $J \leq 1.4 J_0$ ;  $J_0$  - ionization on the tracks of primary protons) in the laboratory system. Fig. 4 shows the pion energy as a function of the departure angle, and Fig. 5 shows the angular distribution of fast protons ( $J \leq 1.4 J_0$ ). The results of investigation are finally summarized as follows: 1) The energy spectrum of charged pions originating from the reaction investigated here can be described by the empirical formula  $N(E_k) = E_k / (a + bE_k^\alpha)$ , where  $E_k$  denotes the kinetic energy of pions in Mev. The coefficients were found to be  $a = 0.17 \pm 0.07$ ,  $b = (1.2 \pm 1.4) \cdot 10^{-6}$ ,  $\alpha = 1.2 \pm 0.2$ .

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Production of Charged  $\pi$ -Mesons in the  
Interaction of 9-Bev Protons With Photo-  
emulsion Nuclei

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S/056/60/038/02/18/061  
B006/B011

$\alpha = 2.60 \pm 0.35$  by the method of least squares. 2) The mean total pion energy was  $\bar{E} = (0.70 \pm 0.2)$  Bev, the mean total energy of fast pions was  $(0.8 \pm 0.2)$  Bev. 3) The mean numbers of fast pions and protons per event were equal to  $3.3 \pm 0.5$  and  $1.0 \pm 0.5$ .  $0.6 \pm 0.2$  was obtained for the mean number of pions with energies lower than 80 Mev. 4) The total energy emitted by pions (taking account of  $\pi^0$ -mesons) amounted to  $(45 \pm 14)\%$ . 5) The ratio of charged  $\pi$ -mesons to K-mesons was  $5.0 \pm 2.5$  in the velocity range  $\beta = (0.5 - 0.8)$ . 6) The resulting experimental data do not contradict the assumption that the interaction considered here can be regarded as a consequence of collisions. The authors finally thank Professor V. P. Dzhelepov and Professor Kh. Khulubey for interest displayed as well as G. I. Bogorovskaya, L. F. Zakharova, K. D. Sverdlina, and D. A. Flyagina for their assistance. T. Vishki thanks Professor I. Auslender and E. Fridlender for their discussions. Furthermore, gratitude is expressed to N. N. Govorun for computations carried out on the "Ural" computer, and to V. A. Meshcheryakov for his aid. L. T. Baradzey, N. I. Kostanashvili, and O. A. Shakhulashvili are mentioned. There are 5 figures, 1 table, and 17 references: 9 Soviet, 1 Italian, 1 Indian, 3 English, and 3 American.

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44

Production of Charged  $\pi$ -Mesons in the  
Interaction of 9-Bev Protons With Photo-  
emulsion Nuclei

S/056/60/038/02/18/061  
B006/B011

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy  
(Joint Institute of Nuclear Research)

SUBMITTED: August 30, 1959

44

Card 4/4

81716  
S/020/60/133/01/14/070  
B014/B011

24.6900  
AUTHORS:

Batusov, Yu. A., Bogachev, N. P., Bunyatov, S. A.,  
Sidorov, V. M., Yarba, V. A.

TITLE:

Formations of Charged Mesons by  $\pi^-$ -Mesons With an Energy  
of 290 Mev on Hydrogen

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 1,  
pp. 52-55

TEXT: The first results obtained from the investigation under review were submitted by B. M. Pontekorvo in July, 1959, at the Conference for the Physics of High-energy Particles held in Kiyev. The authors of the present paper wanted to study the conditions and the energy characteristic of secondary particles in the reaction  $\pi^- + p \rightarrow \pi^- + \pi^+ + n$  at an energy of 290 Mev of the primary  $\pi^-$ -mesons. The angular and momentum distribution obtained are compared with the statistical theory by Fermi and the isobaric model by Lindenbaum and Sternheimer. The meson production was conducted in pellicle stacks, which were exposed to a  $\pi^-$ -meson beam from the synchrocyclotron of the Laboratoriya yadernykh problem Ob'yedinennogo instituta yadernykh issledovaniy (Laboratory of Nuclear Problems of the Card 1/4



81716

Formations of Charged Mesons by  $\pi^-$ -Mesons  
With an Energy of 290 Mev on Hydrogen

S/020/60/133/01/14/070  
B014/B011

Joint Institute of Nuclear Research). 1920 interactions of primary mesons were recorded in the photoemulsion, and in the further analysis only such cases were selected as exhibited only two mesons among the secondary charged particles. 135 interactions satisfied these conditions and in them, the authors measured the energy of the secondary mesons and the angle of their emission. An estimation of the reaction cross section, in which reference was made to a paper by K. S. Bogomolov and M. F. Rodicheva, yielded a value of  $(0.61 \pm 0.13)$  millibarns. Fig. 1 is a graph depicting the momentum distribution of secondary particles in the studied reaction for  $\pi$ -mesons and neutrons. In these diagrams, measurement results are compared with the curves calculated after the statistical theory and the isobaric model. Theory and experiment agree within the limit of error. The diagrams of Fig. 2 show the experimentally determined angular distributions for  $\pi^+$ -mesons,  $\pi^-$ -mesons, and neutrons. Here, the non-isotropic and asymmetrical angular distribution of the reaction products does not agree with the premises of the statistical theory. It follows from the

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Formations of Charged Mesons by  $\pi^-$ -Mesons  
With an Energy of 290 Mev on Hydrogen

81716  
S/020/60/133/01/14/070  
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analysis of experimental data that the momentum distribution, in the summation over all angles in the center-of-mass system, contradicts neither the statistical theory nor the isobaric model. Fig. 3 is a graph depicting the angular distributions among the momenta of secondary particles in the center-of-mass system from 100 experiments. Brief mention is made of the explanation of the asymmetry of the angular distribution of products, which contradicts the statistical theory by Fermi, with the aid of the isobaric model by Sternheimer and Lindenbaum. The authors thank Professor V. P. Dzhelepov for his aid in carrying out the operations, S. M. Bilen'kom, L. I. Lapidus, and R. M. Ryndin for discussing a number of problems. There are 3 figures and 18 references: 8 Soviet and 10 American.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy  
(Joint Institute of Nuclear Research)

PRESENTED: March 14, 1960, by L. A. Artsimovich, Academician

Card 3/4

Formations of Charged Mesons by  $\pi^-$ -Mesons  
With an Energy of 290 Mev on Hydrogen

81716  
S/020/60/133/01/14/070  
B014/B011

SUBMITTED: March 5, 1960

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83750

S/056/60/038/004/043/048  
B006/B056

24.6900

AUTHORS:

Bogachev, N. P., Bunyatov, S. A., Merekov, Yu. P.,  
Sidorov, V. M., Yarba, V. A.

TITLE:

Inelastic Interaction <sup>14</sup> of 9-Bev Protons With Free and Bound  
Nucleons in Photoemulsions

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 38, No. 4, pp. 1346 - 1348

TEXT: The authors recorded 243 inelastic interactions, viz., 140 pp and 103 pn events in an emulsion chamber irradiated with 9-Bev protons on the proton synchrotron of the Laboratoriya vysokikh energiy Ob'-yedinennogo instituta yadernykh issledovaniy (High-energy Laboratory of the Joint Institute of Nuclear Research). For the purpose of determining the energy- and angular distributions of the secondary particles, measurements of the multiple Coulomb scattering and ionization were carried out; the results obtained are briefly discussed. The angular distributions of the charged pions and protons in the rear semi-space (c.m.s.) occurring in pp-interaction are shown in Fig. 1. Both angular

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83750

Inelastic Interaction of 9-Bev Protons With S/056/60/038/004/043/048  
Free and Bound Nucleons in Photoemulsions B006/B056

distributions are anisotropic as is the case also with 6.2-Bev. This is in contradiction to the assumptions of the statistical theory on the isotropy of the angular distribution of secondary particles in the c.m.s. The mean proton and pion numbers ( $n_p$  and  $n_\pi$ ) occurring per inelastic pp-scattering event in the rear semi-space in the c.m.s. is  $1.3 \pm 0.3$  and  $1.9 \pm 0.3$ , respectively. The corresponding values following from the statistical theory are 1.2 and 2.3. The following n-values are obtained for the two kinds of charged pions:  $n_{\pi^+} = 1.3 \pm 0.3$  and  $n_{\pi^-} = 0.61 \pm 0.06$ . Fig. 2 shows the momentum distributions of protons and charged pions from pp interactions. It is shown that the pion spectrum with respect to the theoretical distribution is shifted toward smaller, and the proton spectrum toward greater momenta. The average momenta in the c.m.s. are calculated to be  $P_p^* = (1.2 \pm 0.1)$  Bev/c and  $P_\pi^* = (0.4 \pm 0.1)$  Bev/c. The statistical theory gives  $P_p^* = 0.79$  Bev/c and  $P_\pi^* = 0.51$  Bev/c. The primary proton in pp collisions loses  $(36 \pm 2)\%$  of

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83750

Inelastic Interaction of 9-Bev Protons With S/056/60/038/004/043/048  
Free and Bound Nucleons in Photoemulsions B006/B056

its energy to the pion production (the statistical theory gives a value of 58%). Fig. 3 shows the angular distributions of the charged secondary particles, taking the correction for geometry into account. The angular distributions (pp interaction) are symmetric in the c.m.s. The angular distributions of the secondary particles from pn scattering are asymmetric, which cannot be explained by the statistical theory. The authors thank Academician V. I. Veksler and Professor V. P. Dzhelepyov for their interest in this investigation. There are 3 figures and 7 references: 6 Soviet and 1 Dutch.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint  
Institute of Nuclear Research) X

SUBMITTED: January 27, 1960

Card 3/3

BOGACHEV, N. P., GRIGORYEV, Ye. L., MERKOV, Yu. P.

"Inelastic Proton-Nucleon Interaction at 9 Bev"


report presented at the Intl. Conference on High Energy Physics, Geneva,  
4-11 July 1962

Joint Inst. for Nuclear Research  
Lab. of Nuclear Problems

S/020/63/148/004/010/025  
B141/B102

AUTHORS: Bogachev, N. P., Grigor'yev, Ye. L., Merekov, Yu. P.  
TITLE: Inelastic proton-nucleon interaction at an energy of 9 Bev  
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 4, 1963,  
793-795

TEXT: In an emulsion chamber irradiated with 9-Bev protons 760 events of inelastic (pN) interactions (492(p-p) and 268(p-n)) were recorded and analyzed. The mean multiplicity for (p-p) reactions was  $3.34 \pm 0.06$ , for (p-n) reactions  $2.76 \pm 0.09$ . The secondary particles were identified in multiple-scattering and ionization-density measurements. The c.m.s. angular distribution of the charged pions was slightly anisotropic and this was traced to the fast  $\pi^+$  component. In both reactions the angular distributions of the secondary protons were strongly anisotropic. The anisotropy decreased with the proton momentum. The results are analyzed from the standpoint of the charge-symmetry hypothesis. The momentum spectra of the charged pions are much softer than those of the secondary protons. The momentum spectra of the pions as well as of the protons



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Inelastic proton-nucleon interaction ...

S/020/63/148/004/010/025  
B141/B102

become softer as the number of secondary particles increases. If the multiplicity increases, the anisotropy of the angular distribution should be reduced, but no such reduction could be observed. The experimental data obtained on secondary protons are not consistent with the statistical theory of multiple production. The model of peripheral collision gives a good description of the experiment. If  $\Delta$  2 particles are produced the model of single meson exchange is sufficient to explain the interactions. At higher multiplicities it is, however, not sufficient. There are 4 figures and 1 table. ✓

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: September 26, 1962, by N. N. Bogolyubov, Academician

SUBMITTED: September 22, 1962

Card 2/2

S/056/63/044/002/018/065  
B102/D186

AUTHORS: Bogachev, N. P., Grigor'yev, Ye. L., Merekov, Yu. P.,  
Mitin, N. A.

TITLE: Emission of  $\text{Li}^8$  fragments in Ag and Br nuclear disintegrations induced by 9-Bev proton bombardment

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44,  
no. 2, 1963, 493-497

TEXT: Nuclear emulsions of the type ННКФМ-Р (NIKFI-R) were exposed to proton bombardment in a synchrotron. Among the total of 15,724 stars with  $N_b > 8$  found on microscopic scanning, 344 contained one and 7 two  $\text{Li}^8$  tracks;  $N_b$  is the number of black prongs. After a correction for the  $\text{Li}^8$  fragments not stopped inside the layer, the total number of stars containing  $\text{Li}^8$  tracks amounts to 428. The  $\text{Li}^8$  yield was found to increase with  $N_b$  (from 8 to 30) from  $0.012 \pm 0.002$  to  $0.072 \pm 0.021$ . The energy distribution of the  $\text{Li}^8$  fragments is compared with the curves calculated on the basis of the evaporation model for (1)  $T = 10 \text{ Mev}$ ,  $V = 5 \text{ Mev}$ ,  
Card 1/2

Emission of  $\text{Li}^8$  fragments ...

S/056/63/044/002/018/065  
B102/B186

$v = 0.015$  c, and (2)  $T = 10$  Mev,  $V = 5$  Mev,  $v = 0$ ;  $T$  is the temperature,  $V$  the Coulomb barrier and  $v$  the velocity of the nucleus hit by the proton. Curve (1) agrees closely with the distribution measured; the latter has, however, a tail at high energies. The angular distributions plotted for  $E \geq 21$  Mev and  $E < 21$  Mev show a considerable difference: the low-energy group of  $\text{Li}^8$  fragments in the lab system is almost isotropic (forward-backward ratio  $= 1.37 \pm 0.30$ ) that of the fast group is anisotropic ( $2.18 \pm 0.46$ ). The energy distribution as well as the angular distribution (characterized by the forward-backward ratio) are both virtually independent of  $N_p$ . Except for the large width of the energy spectrum all characteristics agree with the theory of  $\text{Li}^8$  evaporation from a highly excited nucleus. There are 5 figures and 1 table.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: September 24, 1962

Card 2/2

S/020/63/148/005/009/029  
B112/B186

AUTHORS: Bogachev, N. P., Grigor'yev, Ye. L., Merekov, Yu. P.

TITLE: Cross-section for the formation of  $\text{Li}^8$  in a nuclear emulsion by 9-Bev protons

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 5, 1963, 1046

TEXT: N. A. Perfilov, N. S. Ivanova et al. (ZhETF, 38, 345 (1960)) gave an estimate (3 millibarn) for the formation cross-section of  $\text{Li}^8$  and  $\text{B}^8$ . The author improves this estimate by investigating the formation of  $\text{Li}^8$  in a  $\text{H}_2\text{N}_2\text{H}_2\text{P}$  (NIKFI-R) emulsion by 9-Bev protons. His value obtained is  $2.4 \pm 0.6$  millibarn. A further result is that the formation cross-section of  $\text{Li}^8$  is practically constant over the energy range from 1 Bev to 9 Bev.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: October 26, 1962, by N. N. Bogolyubov, Academician

Card 1/2

Cross-section for the formation of  $\text{Li}^8$  ... S/020/63/148/005/009/029  
B112/B186

SUBMITTED: September 22, 1962

Card 2/2

L-13645-63 EWT(m)/BDS AFETC/ASD

ACCESSION NR: AP3003113

S/0056/63/044/006/1869/1872 57

AUTHOR: Bogachev, N. P.; Volod'ko, A. G.; Grigor'yev, Ye. L.; Merekov, Yu. P.

TITLE: Emission of Li sup 8 fragments in the disintegration of Ag and Br nuclei by 19 BeV protons

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 1869-1872

TOPIC TAGS: emission of lithium fragments, disintegration of Ag nuclei, disintegration of Br nuclei, evaporation model

ABSTRACT: The main characteristics of the emission of Li sup 8 in disintegrations with more than 8 black prongs, such as the yield per disintegration, the energy and angular distributions, and some information concerning the emission of two fragments in one disintegration, are presented as results of a study which continues similar earlier work (ZhET<sup>u</sup> v. 44, 493, 1963) at lower proton energy. The compatibility with the evaporation scheme, which was found in the earlier experiments, is found to apply in the present range of energies, too. "The authors thank Prof. V. P. Dzhelepov for continuous interest and attention to the work, and also Prof. I. I. Gurevich and B. A. nikol'skiy, who graciously furnished emulsions irradiated in the CERN proton

Card 1/1 Joint Inst Nuclear Research

BOGACHEV, N.P.; GRIGOR'YEV, Ye.L.; MEREKOV, Yu.P.

Cross section of  $\text{Li}^8$  formation in a nuclear emulsion by 9 Bev.  
protons. Dokl. AN SSSR 148 no.5:1046 F '63. (MIRA 16:3)

1. Ob'yedinennyy institut yadernykh issledovaniy. Predstavleno  
akademikom N.N.Bogolyubovym.  
(Lithium isotopes) (Photography, Particle track) (Protons)

BOGACHEV, N.P.; GRIGOR'YEV, Ye.L.; MEREKOV, Yu.P.; MITIN, N.A.

Emission of  $\text{Li}^8$  fragments in the fission of Ag and Br nuclei  
induced by 9 Bev. protons. Zhur. eksp. i teor. fiz. 44 no.2:  
493-497 F '63. (MIRA 16:7)

1. Ob'yedinennyy institut yadernykh issledovaniy.



BOGACHEV, P.

Russia - Public Works

Great Stalinist construction projects of communism  
Prof. soiuzy no. 9, 1952

BOGACHEV, P. I.  
25548

Opytnaya Otlivka Bruschatki Chelyab. Metallurg. Zavod.  
Stal', 1948, No. 7, S. 650-52

SO: LETOPIS NO. 30, 1948

BOGACHEV, S., izobretatel'

New chipping unit. Sel'. stroi. 15 no.7:13 J1 '61. (MIRA 14:8)  
(Wood-working machinery) (Shingles)

18.3200

78036  
SOV/130-60-3-5/23

AUTHOR: Vasil'yev, A. N. Bogachev, S. I. (Engineers)

TITLE: Utilization of Titanoccontent Waste for Deoxidation of Steel

PERIODICAL: Metallurg, 1960, Nr 3, pp 6-8 (USSR)

ABSTRACT: At the Kuznetsk Combine (Kusnetskiy Combinot) the possibility of utilizing high-titanium wastes (chips and sheet trimmings) instead of ferrotitanium was investigated. The investigation was carried out on 15 melts of steels 18KhGT and 30KhGT (chemical composition not given). Based on experimental work, the following conclusions were made: (1) The substitution of ferrotitanium by industrial waste material does not cause any technological difficulties, and guarantees uniformity of metal in the ladle. (2) High-titanium chips dissolve in the ladle better than ferrotitanium. (3) Better microstructure of rolled metal was obtained in the melts with metal temperature before deoxidation 1,650-1,600° C.

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Utilization of Titanoccontent Waste  
for Deoxidation of Steel

78036  
SOV/130-60-3-5/23

(4) The surface quality and mechanical properties of experimental and regular melts are practically the same. (5) Loss in burning out of titanium in both groups of melts is 64.0%; loss of silicon in experimental melts is 8%, in regular, 6.7%. (6) Utilization of titanium waste saves 21 rubles per ton of metal. (7) The results of mechanical tests of regular and experimental melts are given in Table 2. There are 3 tables.

ASSOCIATION: Kuznetsk Metallurgical Combine (Kuznetskiy metallurgicheskiy combinat)

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# Utilization of Titanocent Waste for Deoxidation of Steel

78036  
SOV, 130-60-3-5/23

Table 2. Results of mechanical tests of regular and experimental melts.

[illegible]

Card 3/3

VASIL'YEV, A.N.; BOGACHEV, S.I.

Deoxidizing steel by silicon-manganese alloys. Metallurg  
5 no.9:13-15 S '60. (MIRA 13:8)

1. Kuznetskiy metallurgicheskiy kombinat.  
(Steel--Metallurgy) (Silicon-manganese alloys)

VASIL'YEV, A.N.; BOGACHEV, S.I.

Use of titanium tailings in 18KhGT steel smelting. Biul.  
TSIICHM no.9:45-46 '60. (MIRA 15:4)

1. Kuznetskiy metallurgicheskiy kombinat.  
(Chromium steel--Metallurgy) (Titanium)



S/130/61/000/003/001/008  
A006/A001

AUTHORS: Vasil'yev, A.N., Bogachev, S.I.

TITLE: The Use of Titanium Sponge for the Deoxidizing of Steel

PERIODICAL: Metallurg, 1961, No. 3, pp. 14 - 16

TEXT: The use of titanium sponge replacing ferrotitanium when melting 18XГТ (18KhGT) and 30XГТ (30KhGT) steel in single-runner open-hearth furnaces has been started at the Kuznetsk Metallurgical Combine. Large-scale research work has preceded the introduction of this new method. The authors present results obtained from experimental heats. Until the moment of final deoxidation of the metal, the experimental heats were conducted according to conventional technological instructions. The metal of conventional heats was deoxidized in the ladle as follows: when filling the ladle with metal to 1/5 of its height the total amount of ferrosilicon is supplied from a stationary bin; then 50-180 mm ferrotitanium lumps are supplied from a trough suspended on a bridge crane. The supply of deoxidizers is completed when filling the ladle with metal 3/4 of its height. Due to the insufficient dissolving of ferrotitanium in the ladle prior to slag formation, the upper metal layers were saturated with Ti, and Mg and Si were reduced from the slag. As a result, the number of ingots rejected, on ac-

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S/130/61/000/003/001/008  
A006/A001

## The Use of Titanium Sponge for the Deoxidizing of Steel

count of their chemical composition was about 2.0%. In the experimental heats the order to supplying the admixtures into the ladle remained the same. The difference consisted merely in the fact that instead of ferrotitanium, 410 g/t of aluminum and about 600 kg per heat (3.2 kg/t) titanium sponge were supplied to the ladle. Two kinds of titanium sponge were used: "siftings" which are 10-50 mm lumps of 3.8 g/cm<sup>3</sup> specific weight, and "rejects" of up to 100 mm size in the plane, up to 5 mm thick and of 2.6 g/cm<sup>3</sup> specific weight. The chemical composition of both types is given below:

	Ti,	Fe	C	Si	Mn, P, S
Rejects:	98.5	1.4	0.05	0.05	traces
Siftings	99.4	0.5	0.05	0.05	traces

Titanium sponge was used for 19 experimental heats of 18KhGT and one heat of 30KhGT steel. A comparison is made with data obtained in 1959 from 11 conventional heats, with ferrotitanium addition to the ladle. Results obtained are given in Tables 1, 2, 3. On the basis of the experiments performed and of the practical use of titanium sponge the following conclusions can be drawn: the replace-

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S/130/61/000/003/001/008  
A006/A001

### The Use of Titanium Sponge for the Deoxidizing of Steel

ment of ferrotitanium by titanium sponge does not present any technological difficulties and assures a uniform composition of the steel. Titanium sponge dissolves in the ladle better than ferrotitanium; as a result rejects of ingots due to unsatisfactory chemical composition, are eliminated. The quality indices of metal melted using titanium sponge are practically not different from metal obtained with the use of ferrotitanium. The use of titanium sponge yields savings of about 50 kopeks per 1 ton of melted steel. To prevent ignition of titanium sponge, it should be stored and transported in closed metal containers.

Table 1: a) number of ingot; b) chemical composition, %; c) number of ingot;  
d) chemical composition, %

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A006/A001

The Use of Titanium Sponge for the Deoxidizing of Steel

Table 1: Distribution of Elements in Metal Samples of 11 Experimental Heats

Plasma Heat	Homop centns	Analyzed cores, %			Plasma Heat	Homop centns	Analyzed cores, %		
		Mn	Si	Ti			Mn	Si	Ti
7-4562	2	0.92	0.27	0.12	7-4640	2	0.87	0.23	0.11
	14	0.93	0.27	0.12		15	0.85	0.27	0.11
	31	0.91	0.25	0.12		31	0.85	0.29	0.11
	32	0.86	0.24	0.12					
9-4294	2	0.96	0.29	0.11	7-4633	2	0.84	0.23	0.09
	14	0.97	0.29	0.11		15	0.86	0.23	0.08
	31	0.93	0.30	0.11		30	0.82	0.25	0.08
	32	0.91	0.30	0.11		31	0.84	0.22	0.08
10-4411	2	0.90	0.27	0.10	7-4623	2	0.84	0.20	0.08
	13	0.87	0.26	0.10		14	0.84	0.20	0.08
	34	0.89	0.28	0.10		28	0.85	0.20	0.08
						29	0.82	0.19	0.08
9-4354	2	0.86	0.26	0.10	9-4296	2	0.86	0.24	0.12
	12	0.85	0.29	0.10		15	0.92	0.24	0.12
	23	0.86	0.28	0.08		32	0.86	0.24	0.12
	24	0.88	0.30	0.08					
7-4648	2	0.92	0.30	0.12	10-4348	2	0.90	0.24	0.10
	14	0.91	0.30	0.12		14	0.88	0.27	0.09
	28	0.88	0.30	0.12		28	0.88	0.24	0.10
	29	0.91	0.31	0.12		30	0.88	0.24	0.10
10-4334	2	0.88	0.23	0.10					
	15	0.88	0.27	0.09					
	24	0.84	0.23	0.10					
	32	0.84	0.23	0.10					

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S/130/61/000/003/001/008

A006/A001

The Use of Titanium Sponge for the Deoxidizing of Steel

Table 2: Results of Mechanical Tests

a)	b)	c)	d)	e)	f)	g)
Плавки	число плавки	предел прочности $\sigma_B$ , кг/мм <sup>2</sup>	предел текучести $\sigma_s$ , кг/мм <sup>2</sup>	относительное удлинение $\delta$ , %	относительное сужение $\psi$ , %	ударная вязкость $a_K$ , кг/см <sup>2</sup>
По ТУ	h)	100	not less	9	50	8
Опытные	10	110,4	108,4	12,5	61,9	12,7
Обычные	11	106,0	103,0	13,2	63,0	14,0

a) heat; b) number of heats; c) ultimate strength  $\sigma_B$  kg/mm<sup>2</sup>; d) yield limit  $\sigma_s$  kg/mm<sup>2</sup>; e) relative elongation  $\delta$ , %; f) relative constriction  $\psi$ , %; g) toughness  $a_K$ , kg/cm<sup>2</sup>; h) according to techn. specific; i) experimental

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The Use of Titanium Sponge for the Deoxidizing of Steel S/130/61/000/003/001/008  
A006/A001

Table 3: Consumption of Deoxidizers; a) Aluminum; b) Ferro-Ti; c) Ti-sponge.

Раскислители Deoxidizers	Conventional heats (11 heats) Обычные плавки (11 плавки)					Experimental Heats (19 heats) Опытные плавки (19 плавки)				
	Supplied to the ladle, kg	Content in finished steel		loss, %		Supplied to the ladle, kg	Content in finished steel		loss, %	
		Ti	Si	Ti	Si		Ti	Si	Ti	Si
45%-ная FeSi ...	305	—	0,29	—	9,3	490	—	0,27	—	17,0
a) Алюминий . . .	—	—	—	—	—	80	—	—	—	—
b) Ферротитан . . .	2000	0,098	—	64,2	—	—	—	—	—	—
c) Титановая губка	—	—	—	—	—	620	0,104	—	66,8	—
Всего . . .	2305	0,098	0,29	64,2	9,3	1190	0,104	0,27	66,8	17,0
Total										

There are 3 tables.

ASSOCIATION: Kuznetskiy metallurgicheskiy kombinat (Kuznetsk Metallurgical Combine)

Card 6/6

VASIL'YEV, A.N.; BOGACHEV, S.I.

Rapid pouring of rimmed steel. Metallurg. 8 no.10:16-17 0 '63.  
(MIRA 16:12)

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TRIFONOV, O.V.; BOGACHEV, S.I.; VASIL'IEV, A.N.

Pouring steel with a 45 millimeter casting nozzle. Metallurg 10  
no.3:18-19 Mr '65. (MIRA 18:5)

1. Kuznetskiy metallurgicheskiy kombinat.



MONASTYRSKIY, V.Ya.; BOGACHEV, S.I.; VASIL'YEV, A.N.

Heating of high-grade steel ingots with dolomite waste. Metallurg  
10 no.10:17-19 0 '65. 71 (MIRA 18:10)

1. Kuznetskiy metallurgicheskiy kombinat.

BOGACHEV, S.Ya. [Bohachov, S.IA.], kand. tekhn. nauk

How to determine correctly the seeding rate for sugar beets.  
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Machine for harvesting sugar beet seed plants. Trakt. 1  
sel'khozmasb. 32 no.2:33 F '62. (MIRA 15:2)  
(Beets, Sugar)  
(Harvesting machinery)

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(MIRA 6:11)  
(Cosmic rays)

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(Syzkin-Shklovskii, L.E.)

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114, F '61. (CIA 14:2)  
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1. Severo-Zapadnaya gidrogeologicheskaya stantsiya.



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Distr: 4E2o

Replacement of the Supporting Frameworks of a Tilting Furnace. V. I. Bodrov, M. G. Romanov and V. I. Bogdanov. (Stal, 1976, (9), 846). [In Russian]. A brief account is given of the devices used and the organization of the work for changing the supporting framework of a tilting furnace during a ten-day cold-repair period. The whole furnace working structure (2000 tons) was lifted bodily with the aid of 18 jacks.—a, x.

Zhdanovskoye stroitel'noye upravleniye trosta "Tuzhdomshremont."

*BOGACHEV, V.I.*

BODROV, V.I., inzhener; YERMOLOV, M.G., inzhener; ~~BOGACHEV, V.I., inzhener.~~

General overhaul of a large capacity tilting open hearth furnace.  
Stal' 16 no.3:266-268 Mr '56. (MIRA 9:7)

1.Zhdanovskoye stroitel'noye upravleniye tresta Yuzhdmnarement.  
(Open hearth furnace)

BOGACHEV, V. I.

BOBROV, V. I., inzhener. YERMOLOV, M. G. [deceased] inzhener.; BOGACHEV, V. I.,  
inzhener.

General overhaul of blast furnaces keeping part of the masonry.  
Stal' 17 no. 3:274 Mr '57. (MLRA 10:4)

1. Zhdanovskoye upravleniye tresta "Yuzhdomremont".  
(Blast furnaces--Repairing)

*BOGACHEV, V.K.*

USSR/General Division. Problems of Teaching.

A-7

Abs Jour : Ref Zhur-Biologiya, No 20, 1957, 85131

Author : V. K. Bogachev

Inst : Yaroslavl State Pedagogical Institute

Title : Studies to be Made by Students of Reservoir  
Vegetation When Permanently Situated and on  
Tourist Excursions

Orig Pub : Uch. zap. Yaroslavl. gos. ped. in-ta, 1956,  
Issue 21 (31), 183-196

Abstract : It is suggested that schools should partici-  
pate in the work of reservoir study, that  
they should help kolkhozes in the prepara-  
tion of silage composed of water-plants, etc.  
A few themes are developed to be worked out  
both by those permanently settled and stu-  
dents on tourist excursions: the study of

Card 1/2

USSR/General Division. Problems of Teaching.

A-7

Abs Jour : Ref Zhur-Biologiya, No 20, 1957, 85131

Abstract : aquatic and shore vegetation, study of the possibility of raising fish and aquatic birds, acclimatization of practically utilizable plants, change in the vegetation in connection with the building of new hydro-technical installations and water reservoirs.

Card 2/2

BOGACHEV, V.K.; BELOVASHINA, N.M.; ZEMIT, V.E.

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43 no.9:1380-1381 S '58. (MIRA 11:10)

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(Yaroslavl--Botanical research)

DITMAR, A.B., otv.red.; BOGACHEV, V.K., red.; BYTEV, O.N., red.;  
IVANOV, A.N., red.; KULEMIN, A.A., red.; YAKOVLEV, K.F.,  
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[Nature and economy of Yaroslavl Province] Priroda i kho-  
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Present status of geobotanical studies on Yaroslavl Province.

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Some new species of plants in Yaroslavl Province. Bot. zhur.  
47 no.11:1666-1669 N '62. (MIRA 16:1)

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(Yaroslavl Province--Botany)

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New data on the occurrence of plant species rare for  
Yaroslavl Province. Bot. zhur. 49 no.5:709-712 My '64.  
(MIRA 17:8)

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Zonal position and phytogeographical regionalization of the  
Volga Valley area lying within Yaroslavl' Province. Bot. zhur.  
49 no.12:1725-1749 D '64 (MIRA 18:2)

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